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plates. Rough estimates of their color-indices are in accordance with the advanced spectral types which characterize the central portions of spiral nebulæ. The center of the great condensation at the extremity of the branch on the northern side of M 51 is also very yellow; but the minor condensations scattered along the branches of all three spirals are in many instances so deficient in yellow luminosity that they do not appear at all on the yellow plates or are lost on the background of faint nebulosity, which in places is of much the same intensity on both violet and yellow plates. The branches as a whole are relatively blue, but in many of the star-like condensations the more refrangible radiation is relatively very intense.

In comparisons of the sort described, care must be taken to allow for differences in gradation on the two kinds of plates. This difference is frequently important, but for the plates in question the variation in the distribution of the luminosity is so pronounced that there is no mistaking the phenomenon.

FREDERICK H. SEARES.

SIX CEPHEIDS WITH VARIABLE SPECTRA.

Variations in the spectra of eleven Cepheid variables have been announced in recent communications.[1] A considerable number of spectrograms of these stars has been secured during the last two months, and in all cases the variations previously reported are confirmed. Several other Cepheids have been added to the observing program, in fact, all of the brighter ones; and to the list of known spectrum variables six more stars may now be added. In the following table the brightness at maximum and the range of variation are given in visual magnitudes. The photographic range has been measured for some of these stars and found to be nearly double the visual change. The total range of spectrum variation is probably larger in many cases than defined by the limits here given, as the plates are made without knowledge of the light maxima and minima and but seldom do the spectra coincide with the extremes of the range in brightness.

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[1] *Proceedings of the National Academy of Sciences,* **2**, 132, 136, 208, 1916.

Star	Magnitude at Maximum	Range of Variation	Period	Observed Spectrum Variation
W Sagittarii	4.6	0.8	7.595	F0–F9
Y Sagittarii	5.8	0.8	5.773	F4–G0
U Aquilæ	6.2	0.7	7.024	F6–G2
SU Cygni	6.5	0.7	3.846	A6–F7
η Aquilæ	3.7	0.8	7.176	F1–G0
T Vulpeculæ	5.5	0.9	4.436	A9–G1

Variations seem to be present in the spectrum of S *Sagittæ*, but the plates available at present do not give a large range. Small variations are also suspected for U *Vulpeculæ* and ζ *Geminorum*.

Harlow Shapley.

Note on Comet *a* 1916 (Neujmin).

Comet *a* 1916 was first observed photographically by M. Neujmin, of Simeis, Crimea, on February 25, 1916.

The first observation received at the Students' Observatory was one made on February 29th by Van Biesbroeck at the Yerkes Observatory. The next two observations received were made on March 3rd by Hartwig at Bamberg, and on March 7th by Aitken at the Lick Observatory. On the basis of these three observations, an orbit was computed by Mr. Jeffers, Mr. Pierce, and the undersigned. The resulting elements and an ephemeris extending until May 1st are published in *Lick Observatory Bulletin* No. 280.

This orbit is elliptic, the approximate period of revolution being 5.2 years. This period may be changed by a year or two after the comet has been longer under observation. The short period indicates that the comet belongs to the *Jupiter* group.

The comet passed closest to the Sun on March 11th at a distance of about 124,000,000 miles. The plane of motion is inclined to the ecliptic at an angle of about 10°. The eccen-